REMARKS/ARGUMENTS

Claims 1-7 have been canceled. New Claims 8-18 are active in the case. Reconsideration is respectfully requested.

The present invention relates to a process for the oligomerization of olefins.

Claim Amendments

Claims 1-7 have been canceled in favor of new Claims 8-14. The original claims provide complete support for the new claims. New Claims 15-18 find support on page 6 of the text. Accordingly, entry of the new claims into the record is respectfully requested.

Invention

The present invention is directed to a process for the oligomerization of olefins in which an olefin is brought into contact with a catalyst system that is comprised of a) at least one transition metal that is complexed with a polydentate complexing ligand and b) an alkylaluminoxane, each being present in such amounts that the molar ratio of aluminum:transition metal is greater than 10, wherein at least part of the amount of the transition metal complex is added continuously or in portions during the oligomerization.

Claim Rejection, 35 USC 103

Claims 1-5 and 10 stand rejected based on 35 USC 103(a) as obvious over EP-A-0 537 609. This ground of rejection is respectfully traversed.

The EP reference discloses the oligomerization of ethene in the presence of a catalyst that is comprised of a complex of chromium with a polydentate complexing ligand and an alkylaluminoxane. Although the mechanism of olefin oligomerization over transition metal complexes has not been fully elucidated, it is assumed that the activation of the transition

metal complex by the alkylaluminoxane involves a ligand exchange reaction between an abstractable ligand of the complex and the alkyl group of the alkylaluminoxane. This forms a catalytically active species which adds on olefin molecules in a stepwise fashion. The olefin molecules react in the coordination sphere of the transition metal complex to form an oligomer. Liberation of the oligomer regenerates the catalytically active species. However, even though substantial efforts are taken to exclude impurities, the catalyst system eventually exhausts itself, and then has to be discarded.

In the present invention for the oligomerization of olefins, the transition metal complex and the alkylaluminoxane are used in such amounts that the molar ratio of aluminum:transition metal is greater than 10, wherein at least part of the amount of the transition metal complex is added continuously or in portions during the oligomerization of the olefin. Generally, the total amount of alkylaluminoxane and a partial amount of the complex are combined *in situ* immediately before the oligomerization reaction is commenced. The olefin that is to be oligomerized can also be initially charged and/or added continuously or in portions to the combined catalyst components. Alternatively, the aluminoxane and the olefin can be initially charged to the system and then the first partial amount of the transition metal complex can be added.

Claims 1-7 stand rejected based on 35 USC 103 as obvious over EP 0 537 609. This ground of rejection is respectfully traversed.

The Examiner contends "*...it would have been obvious to one having ordinary skill in the art... to have modified the process of the EP reference by continuously adding an additional amount of catalyst...*". In the oligomerization process as claimed, the catalyst is a combination of an aluminoxane and a chromium complex. Neither the aluminoxane alone nor the chromium complex alone are effective as catalysts. In the claimed process, only one catalyst component (aluminoxane) is added continuously or in portions during the

oligomerization. The aluminoxane is used in a large excess. As the aluminoxane is a quite expensive compound, it would be desirable to produce as much as possible olefin oligomer with a given amount of aluminoxane. In the comparative examples contained in the application a similar amount of methyl aluminoxane (about 14,5 mmol) is used. In the example according to the present invention, where the chromium complex is added in portions during the oligomerization, a total of **25.8 gram of dodecene** is obtained. In the comparative example where the chromium complex is added all at once, only **10.2 g dodecene** are obtained.

In the claimed process, the minor compound is added continuously or in portions during the reaction rather than the compound used in excess — contrary to what the skilled person would have expected.

The EP reference simply does not disclose or suggest the addition of further amounts of catalyst to the reaction system in order to maintain catalyst activity. It is only in the present process that the incremental addition of additional amounts of transition metal complex occurs. Why then would one of skill in the art be led by the '609 reference to add additional amounts or incremental amounts of transition metal complex to the reaction system? It is therefore clear that one of skill in the art would not be provided with the motivation suggested by the Examiner. Withdrawal of the rejection is respectfully requested.

It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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